

1 **CLAIMS**

2 1. A method, comprising:

3 receiving multiple streams of audio wave data;

4 defining logical buses that each correspond to an audio wave data

5 consumer;

6 assigning each of the multiple streams of audio wave data to one or more of
7 the logical buses; and

8 routing any audio wave data stream assigned to a particular logical bus to
9 the audio wave data consumer corresponding to said particular logical bus.

10 2. A method as recited in claim 1, further comprising generating the
11 streams of audio wave data in response to receiving a synthesizer instruction.

12 3. A method as recited in claim 1, wherein a plurality of audio wave
13 data streams are assigned to at least one of the logical buses.

14 4. A method as recited in claim 1, wherein each logical bus corresponds
15 to a single audio wave data consumer.

16 5. A method as recited in claim 1, wherein at least two of the logical
17 buses correspond to the same audio wave data consumer.

18 6. A method as recited in claim 1, wherein the audio wave data
19 consumer is a data buffer that performs an action of buffering audio wave data
20 prior to outputting the audio wave data.

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2 7. A method as recited in claim 1, wherein the audio wave data
3 consumer performs an action of effects-processing the audio wave data prior to
4 outputting the audio wave data.

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6 8. A method as recited in claim 1, wherein said assigning comprises
7 creating a data structure and correlating the logical buses with corresponding
8 audio wave data consumers.

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10 9. A method as recited in claim 1, wherein said assigning comprises
11 creating a data structure and correlating the logical buses with corresponding
12 audio wave data consumers, and wherein said routing comprises referring to the
13 data structure.

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15 10. A method as recited in claim 1, wherein said defining comprises
16 instantiating a programming object to receive the multiple streams of audio wave
17 data.

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19 11. A method as recited in claim 1, wherein said defining comprises
20 instantiating a programming object to receive the multiple streams of audio wave
21 data, and wherein said routing comprises calling an interface of the programming
22 object.

1 **12.** One or more computer-readable media comprising computer-
2 executable instructions that, when executed, direct a computing system to perform
3 the method of claim 1.

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5 **13.** An audio generation system, comprising:
6 a plurality of audio wave data sources that produce one or more streams of
7 audio wave data;

8 a plurality of audio wave data consumers that receive one or more of the
9 streams of audio wave data;

10 a software component that defines logical buses corresponding respectively
11 to the plurality of audio wave data consumers; and

12 the software component configured to receive one or more of the streams of
13 audio wave data at each of the defined logical buses, and route any audio wave
14 data that is received at a particular logical bus to an audio wave data consumer
15 corresponding to said particular logical bus.

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17 **14.** An audio generation system as recited in claim 13, wherein each
18 logical bus corresponds to a single audio wave data consumer.

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20 **15.** An audio generation system as recited in claim 13, wherein at least
21 two of the logical buses correspond to the same audio wave data consumer.

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23 **16.** An audio generation system as recited in claim 13, wherein a
24 plurality of audio wave data streams are assigned to at least one of the logical
25 buses.

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2 **17.** An audio generation system as recited in claim 13, wherein an audio
3 wave data consumer is a data buffer that buffers one or more of the streams of
4 audio wave data.
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6 **18.** An audio generation system as recited in claim 13, wherein an audio
7 wave data consumer effects-processes one or more of the streams of audio wave
8 data.
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10 **19.** An audio generation system as recited in claim 13, wherein an audio
11 wave data consumer is a data buffer that buffers one or more of the streams of
12 audio wave data and effects-processes the buffered audio wave data.
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14 **20.** An audio generation system as recited in claim 13, wherein the
15 sources are software components.
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17 **21.** An audio generation system as recited in claim 13, wherein the
18 sources are programming objects having interfaces that are callable by a software
19 component to generate the one or more streams of audio wave data.
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21 **22.** An audio generation system as recited in claim 13, wherein the
22 sources include one or more synthesizers that generate the one or more streams of
23 audio wave data.
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1 **23.** An audio generation system as recited in claim 13, wherein the
2 sources include a plurality of synthesizers that generate the one or more streams of
3 audio wave data.

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5 **24.** An audio generation system as recited in claim 13, wherein the
6 sources include a plurality of synthesizers that generate the one or more streams of
7 audio wave data.

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9 **25.** An audio generation system, comprising:
10 a synthesizer that generates multiple streams of audio wave data;
11 a plurality of audio wave data consumers that receive the multiple streams
12 of audio wave data; and
13 a software component that defines logical buses, an individual logical bus
14 configured to correspond to an audio wave data consumer, receive one or more
15 streams of audio wave data, and route the one or more streams of audio wave data
16 to the audio wave data consumer.

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18 **26.** An audio generation system as recited in claim 25, wherein a second
19 logical bus is configured to correspond to the audio wave data consumer, receive
20 one or more additional streams of audio wave data, and route the one or more
21 additional streams of audio wave data to the audio wave data consumer.

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23 **27.** An audio generation system as recited in claim 25, wherein the
24 synthesizer has a channel that generates a stream of audio wave data and that is
25 configurable to route the stream of audio wave data to the individual logical bus.

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28. An audio generation system as recited in claim 25, wherein the
synthesizer has a channel that generates a stream of audio wave data and that is
configurable to route the stream of audio wave data to a plurality of the logical
buses, and wherein the logical buses receive the stream of audio wave data and
route the stream of audio wave data to a plurality of corresponding audio wave
data consumers.

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29. An audio generation system as recited in claim 25, wherein the
synthesizer has a plurality of channels that each generate a stream of audio wave
data and that are configurable to route the streams of audio wave data to a plurality
of the logical buses, and wherein the logical buses receive the streams of audio
wave data and route the streams of audio wave data to a plurality of corresponding
audio wave data consumers.

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30. An audio generation system as recited in claim 25, wherein the
synthesizer generates a stream of audio wave data in response to a synthesizer
instruction.

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31. An audio generation system as recited in claim 25, wherein the
synthesizer generates a stream of audio wave data in response to a MIDI
instruction.

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1 **32.** An audio generation system as recited in claim 25, further
2 comprising a second synthesizer to generate additional streams of audio wave
3 data, and wherein the individual logical bus is configured to receive one or more
4 of the additional streams of audio wave data and route the additional streams of
5 audio wave data to the audio wave data consumer.

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7 **33.** An audio generation system as recited in claim 25, further
8 comprising a second synthesizer to generate additional streams of audio wave
9 data, and wherein a second logical bus is configured to correspond to the audio
10 wave data consumer, receive one or more of the additional streams of audio wave
11 data, and route the additional streams of audio wave data to the audio wave data
12 consumer.

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14 **34.** An audio generation system as recited in claim 25, further
15 comprising a data structure to correlate which of the logical buses correspond to
16 an audio wave data consumer.

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18 **35.** An audio generation system as recited in claim 25, further
19 comprising a data structure to correlate which of the logical buses correspond to
20 an audio wave data consumer, wherein the audio wave data consumer receives
21 streams of audio wave data from the corresponding logical buses.

1 **36.** A system, comprising:

2 a plurality of logical bus objects configured to receive audio wave data,
3 wherein each logical bus object corresponds to an audio wave data consumer;

4 a data structure that correlates each logical bus object according to a
5 function of an audio wave data consumer that corresponds to a logical bus object;
6 and

7 wherein one or more streams of audio wave data are assigned to a logical
8 bus object based on the function of an audio wave data consumer that corresponds
9 to the logical bus object.

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11 **37.** A system as recited in claim 36, wherein a logical bus object
12 receives one or more of the assigned audio wave data streams and routes the audio
13 wave data streams to the corresponding audio wave data consumer.

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15 **38.** A system as recited in claim 36, further comprising a synthesizer
16 that generates the one or more streams of audio wave data.

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18 **39.** A system as recited in claim 36, further comprising a synthesizer
19 that generates the one or more streams of audio wave data in response to a MIDI
20 instruction.

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22 **40.** A system as recited in claim 36, further comprising an audio wave
23 data generation object configured to receive audio content and an instruction to
24 generate the one or more streams of audio wave data.

1 **41.** A system as recited in claim 36, wherein each logical bus object
2 corresponds to a single audio wave data consumer.

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4 **42.** A system as recited in claim 36, wherein at least two of the logical
5 bus objects correspond to the same audio wave data consumer.

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7 **43.** A system as recited in claim 36, wherein a plurality of audio wave
8 data streams are assigned to at least one of the logical bus objects.

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10 **44.** A data structure for an audio processing system, comprising:
11 a bus identifier parameter to uniquely identify a logical bus that
12 corresponds to an audio wave data consumer;
13 a function identifier parameter to identify an effects-processing function of
14 the audio wave data consumer;
15 a programming reference to identify the audio wave data consumer; and
16 wherein one or more streams of audio wave data are assigned to the logical
17 bus with the bus identifier parameter according to the function identifier parameter
18 of the corresponding audio wave data consumer.

1 **45.** A method, comprising:

2 providing an audio wave data generation component configured receive
3 audio content and an instruction to generate one or more streams of audio wave
4 data;

5 providing an audio wave data consumer component configured to receive
6 the one or more streams of audio wave data; and

7 providing a logical bus component configured to route the one or more
8 streams of audio wave data to the audio wave data consumer component.

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10 **46.** A method as recited in claim 45, wherein the audio wave data
11 generation component is a synthesizer.

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13 **47.** A method as recited in claim 45, wherein the audio wave data
14 consumer component is a data buffer that performs an action of buffering audio
15 wave data.

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17 **48.** A method as recited in claim 45, wherein the audio wave data
18 consumer component performs an action of effects-processing the audio wave
19 data.

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21 **49.** A method as recited in claim 45, further comprising correlating the
22 logical bus component with the audio wave data consumer component.

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24 **50.** A method as recited in claim 45, further comprising assigning one or
25 more of the streams of audio wave data to the logical bus component.

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2 **51.** One or more computer-readable media comprising computer-
3 executable instructions that, when executed, direct a computing system to perform
4 the method of claim 45.

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6 **52.** A method, comprising:
7 receiving multiple streams of audio wave data;
8 defining logical buses that each correspond to an audio wave data
9 consumer;

10 creating a data structure and designating which of the logical buses
11 correspond to an audio wave data consumer;

12 assigning each of the multiple streams of audio wave data to one or more of
13 the logical buses; and

14 routing an audio wave data stream assigned to a particular logical bus to the
15 audio wave data consumer corresponding to said particular logical bus.

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17 **53.** A method as recited in claim 52, wherein a plurality of audio wave
18 data streams are assigned to at least one of the logical buses.

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20 **54.** A method as recited in claim 52, wherein each logical bus
21 corresponds to a single audio wave data consumer.

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23 **55.** A method as recited in claim 52, wherein at least two of the logical
24 buses correspond to the same audio wave data consumer.

1 **56.** One or more computer-readable media comprising computer-
2 executable instructions that, when executed, direct a computing system to perform
3 the method of claim 52.

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